City of Live Oak Submission

Information needed to characterize individual Ag Dominated Water Bodies

(to be used in conjunction with Water Body Categorization Flow Chart 1 and completed in partnership with the entity that manages/operates the Water Bodies evaluated within this document)

A. Water Body Categorization Information

I. General

1. Entity or district name and mailing address (include website address, if applicable)

   Applicant:
   City of Live Oak
   9955 Live Oak Blvd.
   Live Oak, CA 95953

   Managing/operating entity
   Reclamation District 777 (Laterals 1 & 2, Western Intercepting Canal shared with RD 2056)
   P.O. Box 876
   Gridley, CA 95948

   Reclamation District 2056 (Western Intercepting Canal shared with RD 777)
   P.O. Box 876
   Gridley, CA 95948

   California Department of Water Resources (East Interceptor Canal & Wadsworth Canal)
   Division of Flood Management
   3310 El Camino Ave., Suite 114
   Sacramento, CA 95821-9000

   Sutter Extension Water District (provides irrigation supply water)
   4525 Franklin Road
   Yuba City, CA 95993

2. Manager or Contact Person (include phone and email)

   Bill Lewis
   Consultant for the City of Live Oak
   Lewis605@sbcglobal.net

530-923-3862

Ron Ruzich
Reclamation District 777
Director
rruzich@gmail.com

Jeff Spence
Laughlin and Spence Engineering – representing RD 777 and 2056
530-671-1008
jeff@laughlinspence.com

Jon Ericson
Chief, Flood Maintenance Office
Department of Water Resources (DWR)
916-574-0384
Jon.Ericson@water.ca.gov

Lynn Phillips
Sutter Extension Water District
lpsewd@hughes.net
(530) 673-7138

3. Complete the information needed in Table 1 as provided, with a separate record for each water body to be evaluated:

Table 1 Water Body Information

Name of water body	**Type** *(natural, modified, or constructed)*	**Ag Dominated Water Body Category** *(from Flow chart 1)*	**For Constructed or Modified**			**Length of water body or segment**	**Water Type(s)*** *(e.g., Supply Water, Ag return flows, storm water)*	**Flow Characteristics/ Flow Period**		**Channel Mainte-nance Activities and Frequency**
			Type of Construction or Modification *(e.g. earth-lined, concrete, underground pipe)*	**Year of Construction or Modification**	**Purpose(s) of Construc-tion**			**Natural**	**Managed**	
Lateral 2	*Constructed*	*C1*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*1 mile*	*Primarily treated municipal wastewater, but some Ag return flows, urban and storm runoff*	*Constructed water body – no natural flow*	*Generally Low Flow conditions other than year-round effluent discharge flows*	*Excavation/ dredging as needed. There is no set schedule*
Lateral 1	*Constructed*	*C1*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*5 miles*	*Ag Return flows, treated municipal wastewater, surface water supply spills, urban and storm runoff, groundwater seepage*		*Generally Low Flow conditions, but flow does increase during irrigation and winter storm season*	
Western Intercepting Canal (not to be confused with *West Interceptor Canal* operated by DWR)	*Constructed*	*C1*	*Earthlined*	*Early 1900s*	*Ag Drainage*	*2 miles*	*Ag Return flows, treated municipal wastewater, surface water supply spills, urban and storm runoff, groundwater seepage*		*Generally Low Flow conditions, but flow does increase during irrigation and winter storm season*	

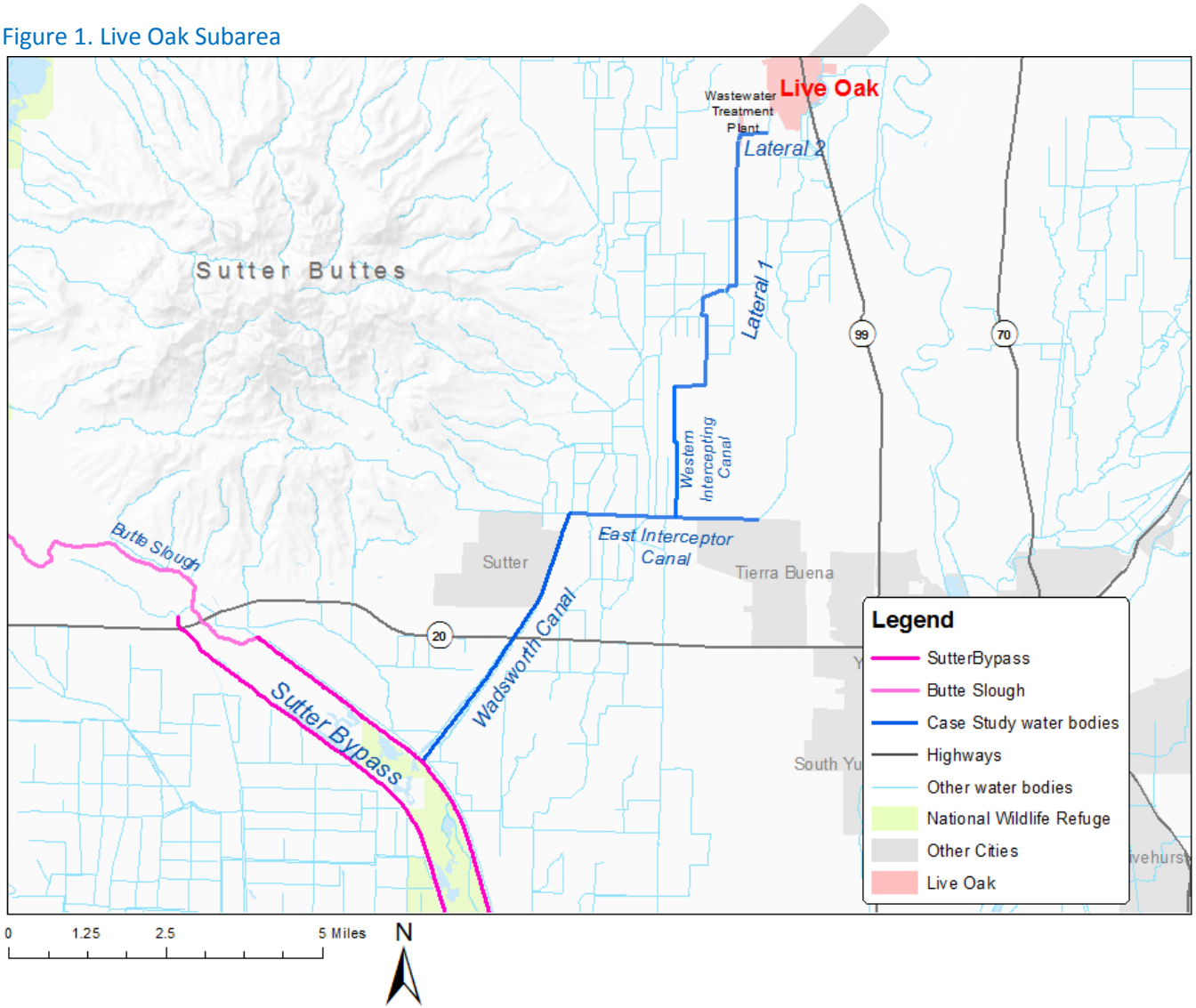
Name of water body	Type *(natural, modified, or constructed)*	Ag Dominated Water Body Category *(from Flow chart 1)*	For Constructed or Modified			Length of water body or segment	Water Type(s)* *(e.g., Supply Water, Ag return flows, storm water)*	Flow Characteristics/ Flow Period		Channel Mainte-nance Activities and Frequency
			Type of Construction or Modification *(e.g. earth-lined, concrete, underground pipe)*	Year of Construction or Modification	Purpose(s) of Construc-tion			Natural	Managed	
East Interceptor Canal	*Constructed*	*C1*	*Earthlined*	*By 1925*	*Flood Control during the storm season and Ag Irrigation/ Drainage during the dry months*	*3 miles*	*Ag Return flows, treated municipal wastewater, surface water supply spills, urban and storm runoff, groundwater seepage*	*Constructed water body– no natural flow*	*Generally Low Flow conditions upstream of confluences with Western Intercepting Canal and Snake River. Managed for Ag return flows/re-cycling during irrigation season and flood flows during the winter season*	*Excavation/dredging as needed. There is no set schedule. DWR also has a NPDES general permit through State Water Resource Control Board to apply aquatic herbicides. In this area. The application is done 1x/year for Primrose control.*
Wadsworth Canal	*Constructed*	*C1*	*Earthlined*	*Some segments in the 1800s, full length in 1924*	*Flood Control during the storm season and Ag Irrigation/ Drainage during the dry months*	*5 miles*	*Ag Return flows, treated municipal wastewater, surface water supply spills, urban and storm runoff, groundwater seepage*		*Managed for Ag return flow/recycling during irrigation season and flood flows during the winter season*	

4. List sources, documents, reports or references used for making the Water Body Category (Flow Chart 1) determination provided in Table 1 for the area under consideration. Links to websites can also be provided if applicable.

    - Reclamation Districts 777 and 2056 district maps/records (available at district offices)
    - Department of Water Resources maps/records (available at Division of Flood Management office)
    - National Hydrography Dataset – Wadsworth Canal and East Interceptor Canal are classified as "Artificial Path" and Lateral 1, Lateral 2 and Western Intercepting Canal are classified as "Canal/Ditch" (U.S. Environmental Protection Agency and the U.S. Geological Survey, 2005)
    - Central Valley Water Board Staff Site Survey and Meeting Notes on 3/15/2012 with representatives from the City of Live Oak, Sutter Extension Water District, Reclamation District 777 and Reclamation District 2056. (Central Valley Water Board, 2012)
    - Central Valley Water Board Meeting Notes on 4/16/2014 with representatives from the City of Live Oak, Reclamation District 777 and Reclamation District 2056. (Central Valley Water Board, 2014a)
    - Central Valley Water Board Meeting Notes on 6/16/2014 with representatives from the California Department of Water Resources, Division of Flood Management. (Central Valley Water Board, 2014b)
    - Department of Water Resources' 2013 Feather River Region Draft Regional Flood Management Plan describes the history of construction for the Wadsworth and East Interceptor Canals. (Department of Water Resources, 2013)
    - 1992 Inland Surface Water Plan report – All water bodies were classified as "C1", a Constructed Ag Drain. (Central Valley Water Board, 1992)
    - Appendix A of this report shows photographs of the receiving waters downstream of the Live Oak Waste Water Treatment Plant

5. Provide a map showing boundaries of the water bodies under consideration (USGS Quad or other map. If Geographical Information System (GIS) shape files are available, include as an attachment)

Figure 1. Live Oak Subarea



6. Source(s) of water for the area under consideration

-Agricultural return flows (the primary source of surface irrigation water is from the Feather River, delivered by Sutter Extension Water District. Groundwater wells also contribute to irrigation supply. Sutter Extension Water District has 2 groundwater wells and there are also private wells in the area that may be used for irrigation purposes.)

-Effluent from the City of Live Oak (year-round)

-Some storm water and urban runoff from the City of Live Oak and Yuba City

-Rainfall during winter season

- Groundwater upwelling

II. Inflows and Outflows to Water Bodies

1. Map or schematic showing the key components of the surface water supply and drainage in the water bodies under consideration. The figure should include inflows and outflows to the water bodies and include (*if applicable*) the following:

   a. Location of surface water supply (intake) points for the water bodies under consideration

   b. Location of ground water supply points for the water bodies under consideration (This should only include wells which pump directly into canals or drains or wells used to supply water outside the land owners' control)

   c. Location of operation spills from the water bodies under consideration

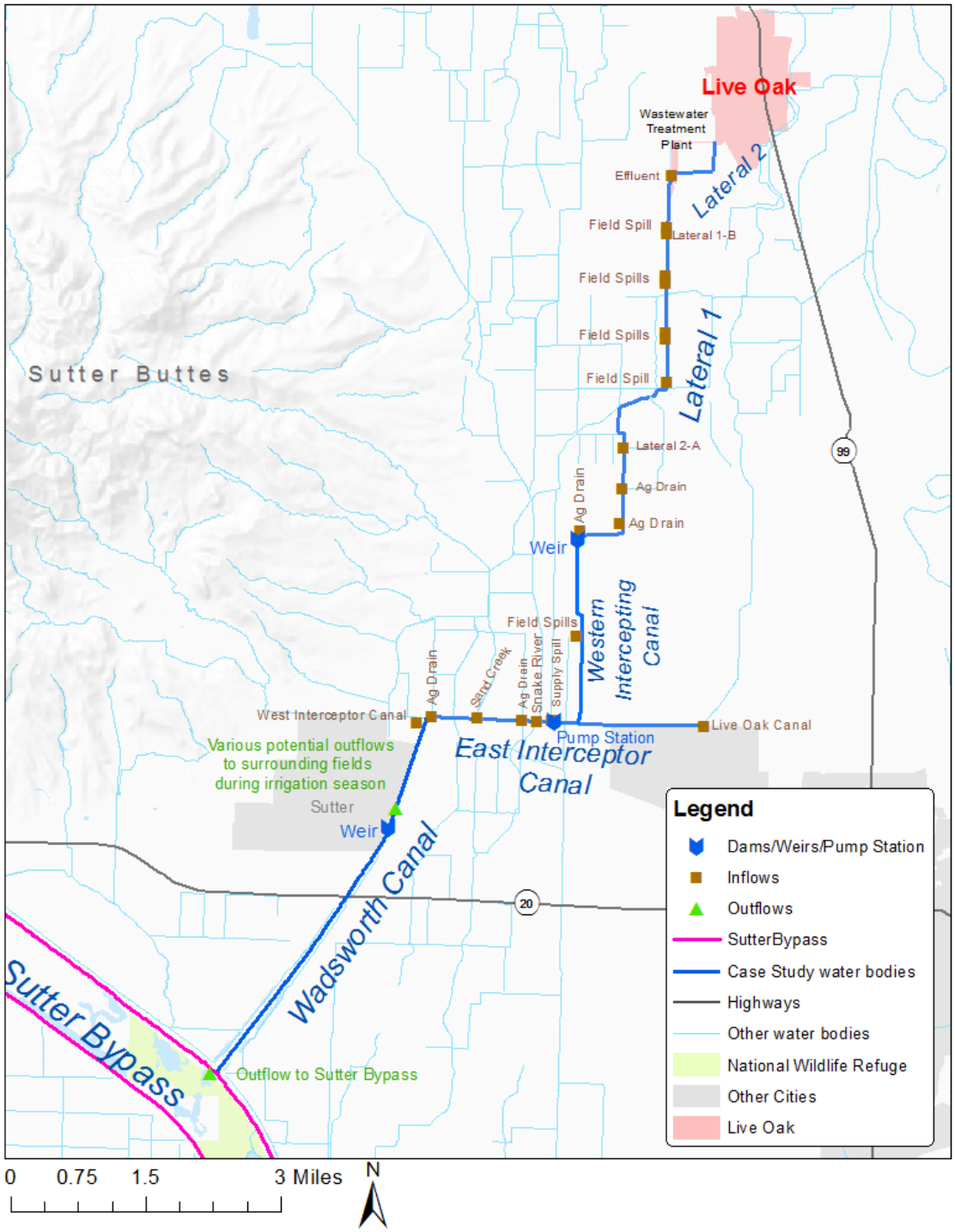
See Figure 2 below for key inflow and outflow points in the water bodies under consideration.

Most inflows to the case study water bodies are from agricultural return flows via pipe spills or Ag drains adjacent to fields. Lateral 2 and the northern portion of Lateral 1 have less Ag drainage due to the higher number of orchards which utilize drip systems. The City of Live Oak's effluent discharge makes up a significant portion of the water flowing in this area. A higher percentage of rice fields are located further south down Lateral 1 to the Wadsworth Canal, resulting in more Ag drainage during the irrigation season. Sutter Extension Water District may spill supply water into the reclamation district systems via supply channels that cross over reclamation district drains. A smaller percentage of water inflow to the case study water bodies comes from urban

and storm water runoff from the City of Live Oak and Yuba City.

Outflows from the case study water bodies are usually associated with irrigation practices. Drain water can be recycled using the weirs to back water up and deliver it to Ag fields via gravity flow. Landowners may also use pumps to recapture the water for irrigation.

Figure 2 Live Oak Subarea - Inflows and Outflows



MUN Beneficial Use Evaluation

I. Municipal and Domestic Supply (MUN) use

a. List any known State Water Rights information pertaining to the municipal and/or domestic supply use in or downstream of the water bodies under consideration, even if the right has never been exercised (if applicable). *For more information on State Water Rights information and the use of database search and mapping tools, visit the following website: http://www.swrcb.ca.gov/waterrights/water_issues/programs/ewrims/*

No known State Water Rights records for a MUN use in the immediate water bodies under consideration or in the downstream water bodies prior to the Sacramento River.

b. Describe other municipal and/or domestic supply use of the surface water system since November 1975 (if applicable)

No known MUN use since November 1975. The City of Live Oak relies on ground water as their municipal source. The City of Yuba City depends primarily on the Feather River as their municipal source, however they do also have ground water wells that are used in water shortage years.

c. Map showing any diversion points in or downstream of the area under consideration where water is used for municipal and/or domestic supply.

NA – no diversions prior to Sacramento River

II. Water Quality Monitoring Program

1. Is the area under consideration covered by water quality monitoring under the Central Valley Irrigated Lands Regulatory Program or any other monitoring program?

Yes, the area under consideration is covered by the Irrigated Lands Regulatory Program.

A significant portion of the area under consideration is covered as part of the Sacramento Valley Coalition (contact – Bruce Houdesheldt).

The area is also covered as part of the California Rice Commission (contact – Tim Johnson).

Information on monitoring sites, results and other information can be found at the following website:
http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/index.shtml

Website links may be provided in lieu of separately answering questions 2-6, if they adequately provide the same information as requested below. If such links are utilized, a Table or Figure reference and page number should be provided if needed. Alternately, information for #2 may be added to the map provided for the water body characterization under A.II.

2. Map showing the location and identifying number of all current and proposed water quality and/or flow monitoring points for all of the following that exist in the area being considered including *as applicable*:

   a. Supply water to the area under consideration

   b. Collected subsurface and surface drainage entering the area under consideration

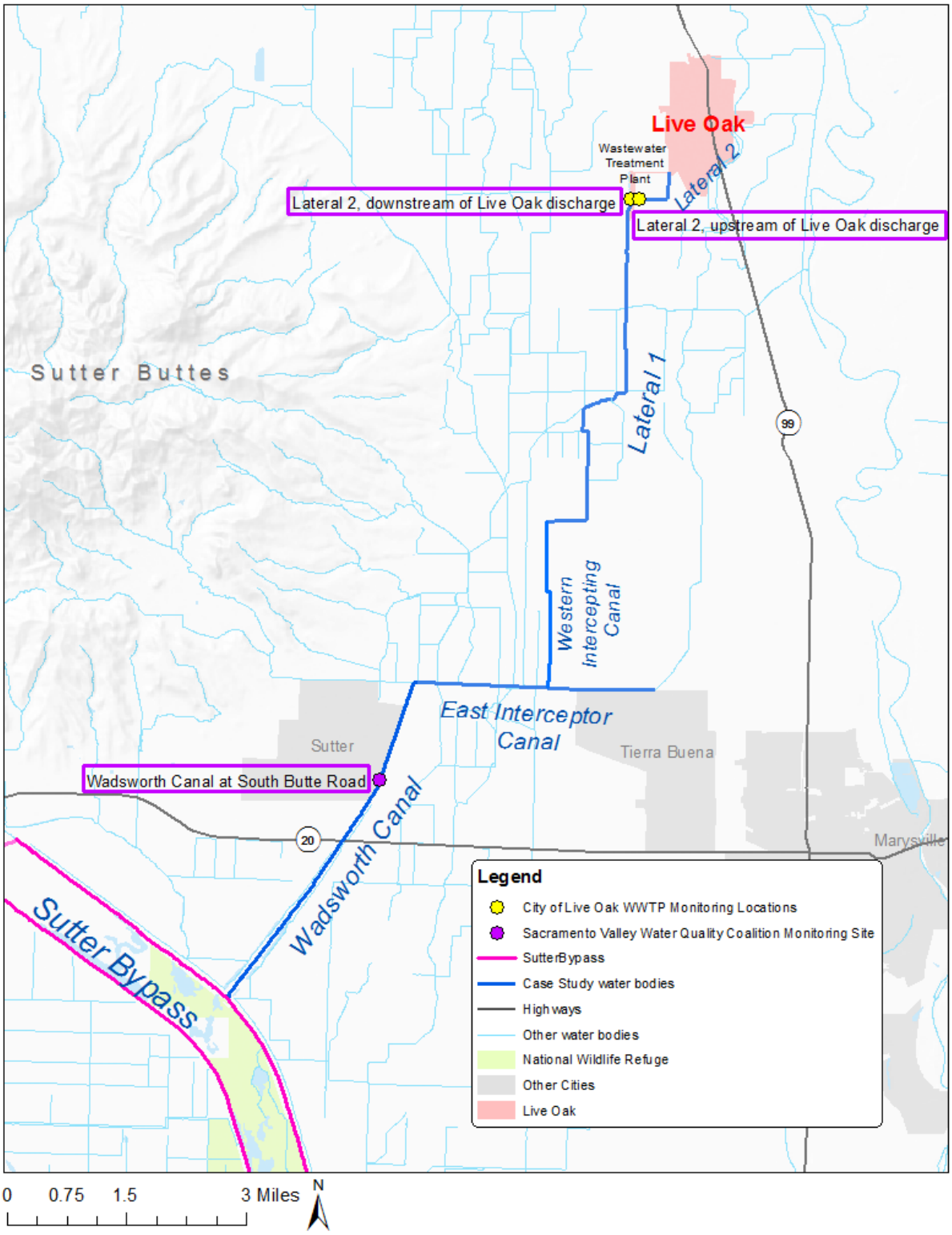
   c. Surface water drainage system

   d. Drains carrying subsurface drainage water or blended water

   ****The map must show monitoring station(s) that represent discharge of Ag drainage from the area under consideration**

   Figure 3 below shows the ILRP and NPDES Monitoring Locations in the area under consideration.

Figure 3 ILRP and NPDES Monitoring Locations in the area under consideration



3. Summarize in existing report or in an attached EXCEL format: monitoring location and identifying number, parameters measured, frequency, period of anticipated sampling (e.g. 2014-2016, ongoing, etc.) and location of resulting data.

Note - A full description of the monitoring and reporting plans for the Sacramento Water Quality Coalition and the California Rice Commission, including locations, frequency and sampling periods can be found in the links provided in answer 4 below.

Relevant monitoring sites for Sacramento Water Quality Coalition:

Special Monitoring Site			
Site Identification	**Site Code**	**Latitude**	**Longitude**
Wadsworth Canal at South Butte Road	WADCN	39.1534 N	-121.7344 W

Relevant monitoring for the Sacramento Water Quality Coalition in Wadsworth Canal:

Special Project sites like this one on Wadsworth Canal are monitored as needed in a surface water quality management plan (SQMP) to evaluate commodity or management practice-specific effects on identified water quality problems, to evaluate sources of identified water quality problems, and to monitor continuing status of identified water quality problems. ***No monitoring is currently scheduled for this site.***

City of Live Oak Wastewater Treatment Plant

Monitoring upstream (RSW-001 50 feet upstream) and downstream (RSW-002, 200 feet downstream) of effluent discharge point in Lateral 2:

Parameter	Frequency
Dissolved Oxygen	1/Week
pH	1/Week
Turbidity	1/Week
Temperature	1/Week
Specific Conductivity	1/Week
Hardness (as CaCO3)	1/Month
Total Dissolved Solids	1/Qtr
Standard Minerals, Priority Pollutant, and other Constituents of Concern	Quarterly during 3rd or 4th year of permit term

4. Summary of the available monitoring data including parameters measured, number of analyses , and inclusive dates of sampling

Monitoring and Assessment Reports for the Irrigated Lands Regulatory Program for the California Rice Commission and the Sacramento Valley Water Quality Coalition can be found at:

http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/monitoring_plans_reports_reviews/index.shtml

Monitoring Data collected since 2004 under the Irrigated Lands Regulatory Program can be found at:

http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/water_quality_monitoring/index.shtml

Link to City of Live Oak's NPDES Self-Monitoring Reports can be found via the CIWQS database at:

https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportEsmrAtGlanceServlet?inCommand=reset

Search Criteria:
Facility Name: "Live Oak City WWTP"
Region: Region 5S-Sacramento
County: Sutter

5. If the area under consideration is covered by the Irrigated Regulatory Lands Program, list any Management Plans previously developed or currently under development. For areas not covered by the Irrigated Regulatory Lands Program, list any known or suspected water quality concerns (including elevated background concentrations in surface or groundwater supplies).

Sacramento Valley Coalition Management Plans for Butte-Yuba-Sutter Subwatershed (2009)

E. coli (Wadsworth Canal at South Butte Road)

Link to website on Management Plans:
http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/management_plans_reviews/coalitions/sacramento_valley_waterquality/index.shtml

California Rice Commission Management Plans:
2010 – Propanil, Algae

Link to website on Management Plans:
http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/management_

plans_reviews/coalitions/california_rice_commission/index.shtml

The ground water supplies in the area under consideration are known to have naturally occurring contaminants such as arsenic, iron and manganese. Other constituents of concern are nitrate, dissolved salts, boron and mercury.

Works Cited

Central Valley Water Board. (1992). *Staff Report - Consideration of Water Body Designations to Comply with Provisions of the Water Quality Control Plan for Inland Surface Waters of California (ISWP).*

Central Valley Water Board. (2012). *Staff Survey Write-up and Meeting Notes for the City of Live Oak- March 15, 2012.* Willows.

Central Valley Water Board. (2014a). *Meeting Notes - April 16 2014 Live Oak Stakeholders.* Live Oak.

Central Valley Water Board. (2014b). *Meeting Notes - June 16 2014 DWR Division of Flood Management.* Sacramento.

Department of Water Resources. (2013). *Feather River Region Draft Regional Flood Management Plan - Appendices.*

U.S. Environmental Protection Agency and the U.S. Geological Survey. (2005). National Hydrography Dataset Plus - NHDPlus, Edition 1.0.

Appendix A – Photos

Photo 1. City of Live Oak Effluent Outfall into Lateral 2 – March 12, 2012

Photo 2. Lateral 2, downstream from effluent discharge (looking downstream) – April 18, 2012

Photo 3. Lateral 1 at Clark Road (looking downstream) – May 24, 2012

Photo 4. East Interceptor Canal at Township Road (looking downstream) – May 24, 2012

Photo 5. Pump Station on East Interceptor Canal at Sutter Extension Water District Supply Channel crossing – March 12, 2012

Photo 6. Confluence of Snake River and East Interceptor Canal west of Township Road – March 12, 2012

Photo 7. Wadsworth Canal at Franklin Road (looking downstream) – March 14, 2012

Photo 8. Sutter Bypass just downstream of Wadsworth Confluence (looking upstream) – August 13, 2012